

# HP EVA4400 M6412 drive enclosure installation instructions

HP Part Number: 5697-0975  
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## About this document

This document describes how to install an M6412 drive enclosure into a cabinet as part of an EVA4400 storage array. The drive enclosure installation may be performed while the array is in operation.

**NOTE:** You can only add one disk enclosure online at a time.

## Before you begin

Read the following warnings and cautions before installing the drive enclosure.

**⚠ WARNING!** Make sure that the rack is sufficiently stable. If provided, lower the cabinet leveler feet and make sure any required stabilizers are installed. If provided, extend the rack anti-tip device. Failure to extend the anti-tip device could result in personal injury or damage if the cabinet tips over.

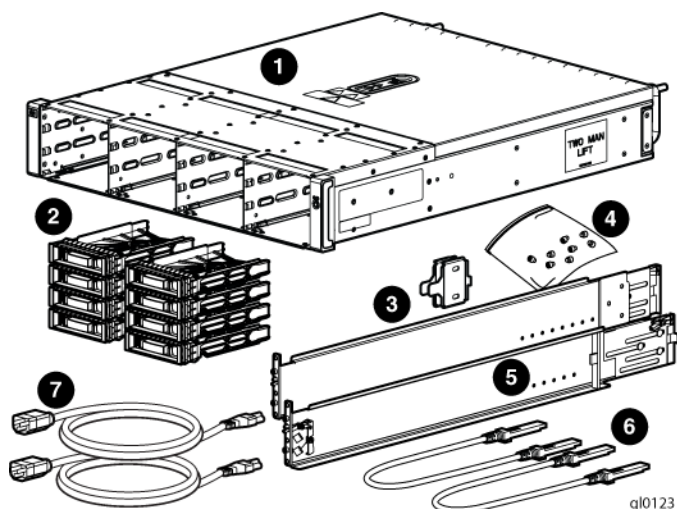
**⚠ CAUTION:**

- Make sure that the cabinet and all equipment mounted in the cabinet have a reliable ground connection. Verify that the total current of the cabinet components does not exceed the current rating of the power distribution unit or the power distribution modules.
- Parts can be damaged by electrostatic discharge. User proper anti-static protection. For additional information, see the documentation that shipped with your system.

## Kit contents

Check the kit contents to make sure you have the items listed in [Figure 1 \(page 3\)](#).

**Figure 1 Kit contents**



- |   |  |   |                                 |
|---|--|---|---------------------------------|
| 1 | Drive enclosure  | 5 | Rails with -03 brackets         |
| 2 | Eight disk drive blanks (may come preinstalled in enclosure) | 6 | Two Fibre Channel copper cables |
| 3 | -04 brackets (not used)                                      | 7 | Two enclosure power cords       |
| 4 | Pins for round-hole cabinet conversion                       |   |                                 |

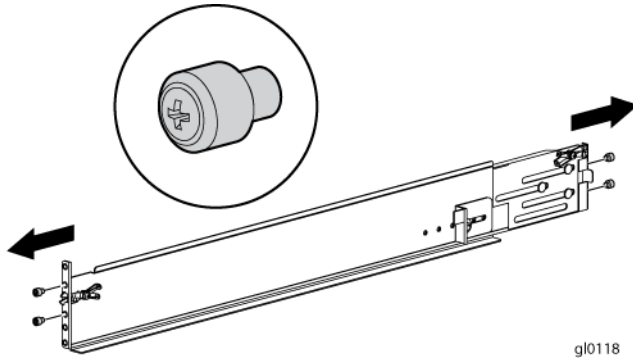
## Attaching the rails

The cabinet rail kit supplied with the drive enclosure comes configured for square-hole cabinets. If you need to convert the rails for a round-hole cabinet, perform the following steps:

- ❗ **IMPORTANT:** Do not remove the pins from the ends of the cabinet rails unless you are converting the rails for use in round-hole cabinets. These load-bearing pins are designed to fit through the holes without being removed.

1. Locate the bag of eight round-hole pins that is included in the cabinet rail kit.
2. Use a No. 2 Phillips screwdriver to remove the standard pins from the front and back of the left and right rails (four on each rail). See [Figure 2 \(page 4\)](#).

**Figure 2 Square hole to round hole cabinet conversion**

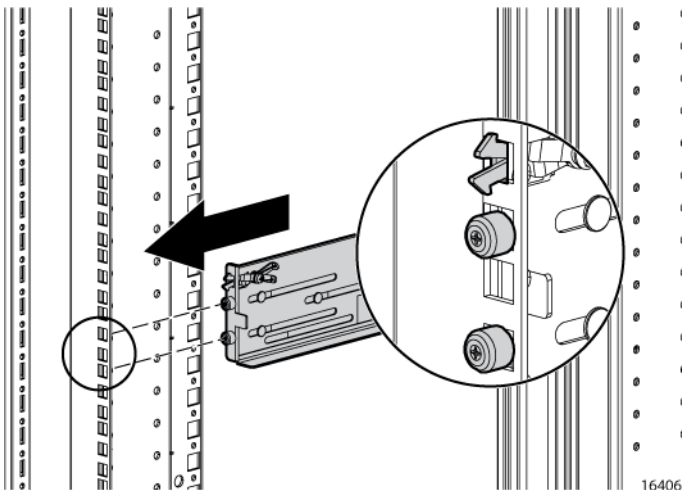


3. Attach the round-hole pins into the eight holes on the rails where the standard pins were removed.
- To attach the rails to the cabinet:

**NOTE:** The designation of left and right rail is made when looking at the front of the rack. The rails are marked by an R (right) and L (left) stamped on the metal.

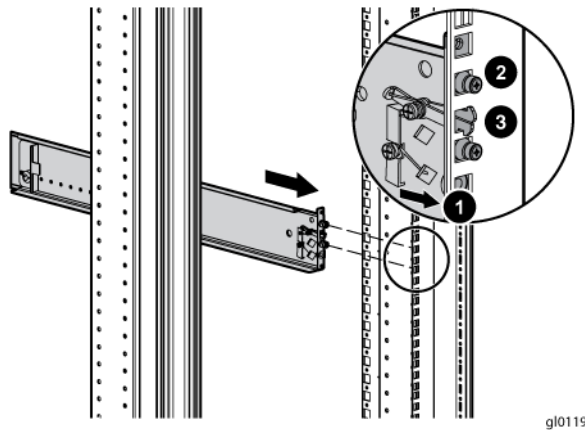
1. Insert the rear end of the right rail into the inside back of the cabinet until the pins partially extend through the holes in the cabinet upright.
2. Squeeze the scissors latch together to insert the rail and pins through the cabinet upright holes until the latch engages. See [Figure 3 \(page 4\)](#).

**Figure 3 Attaching the right, rear rail**



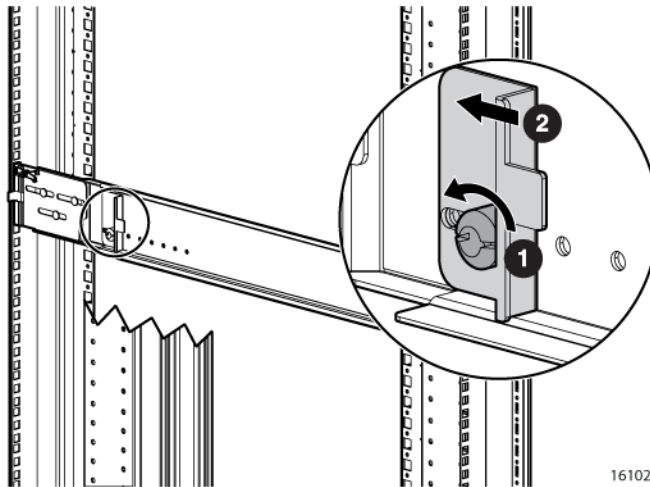
3. Extend the front end of the right cabinet rail toward the inside front of the cabinet.
4. Pull the locking latch to release the scissors latch (1, [Figure 4 \(page 5\)](#)) and squeeze the scissors latch together to insert the rail and pins through the cabinet upright holes (2) until the latch engages (3).

**Figure 4 Installing front, right rail**



5. Loosen the locking nut on the shipping retaining bracket (1, [Figure 5 \(page 5\)](#)) and slide the bracket to the farthest position on the rear of the rail (2). This moves the bracket out of the way to allow you to install the enclosure in the rails.

**Figure 5 Move back retaining bracket**



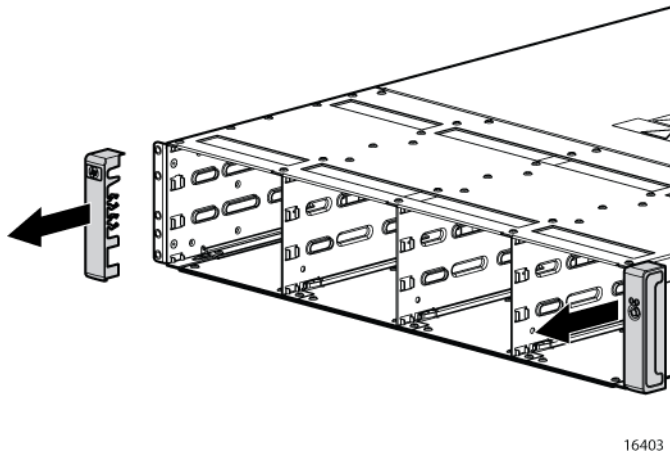
6. After attaching the rail, grab and move the rail gently to be sure it is firmly engaged in the cabinet and that all latches are engaged in the cabinet holes.
7. Repeat the above steps for the left rail.

## Installing the drive enclosure

1. Remove the bezel covers from each side of the enclosure (see [Figure 6 \(page 6\)](#)).

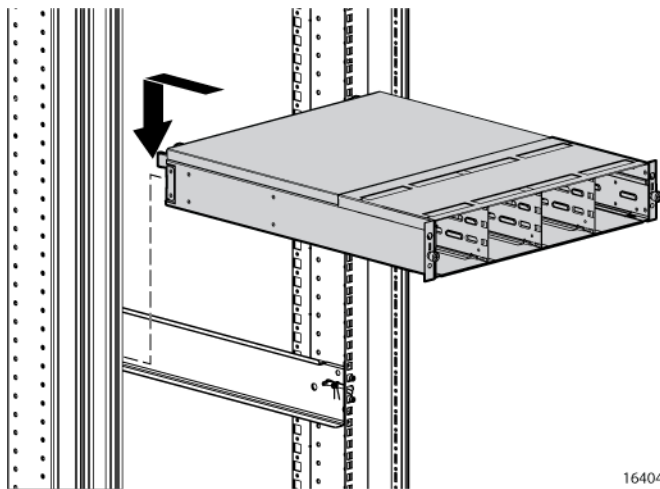
**⚠ CAUTION:** Be careful when removing the bezel covers so as to not break the locking tabs that secure the covers to the enclosure.

**Figure 6 Bezel cover removal**



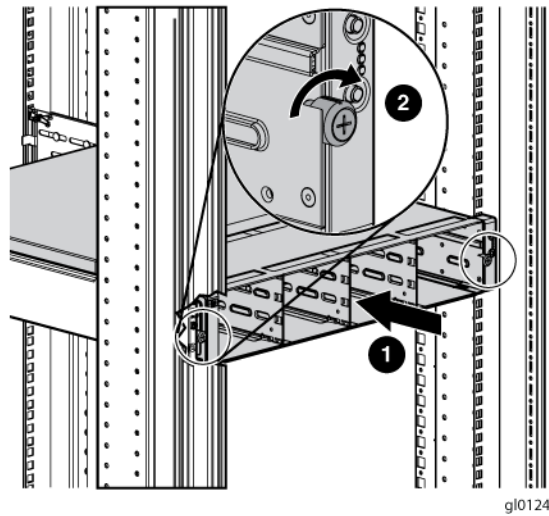
2. Align the enclosure with the rails and slide it into the cabinet.

**Figure 7 Slide drive enclosure onto rails**



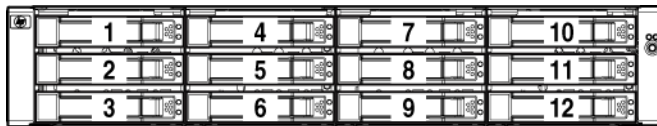
3. Continue sliding the enclosure into the cabinet until the front edge is flush with the front of the rack (1, [Figure 8 \(page 7\)](#)). Tighten the enclosure thumbscrews into the cabinet (2), taking care to not strip the Phillips-head thumbscrews.

**Figure 8 Tighten drive enclosure to cabinet**



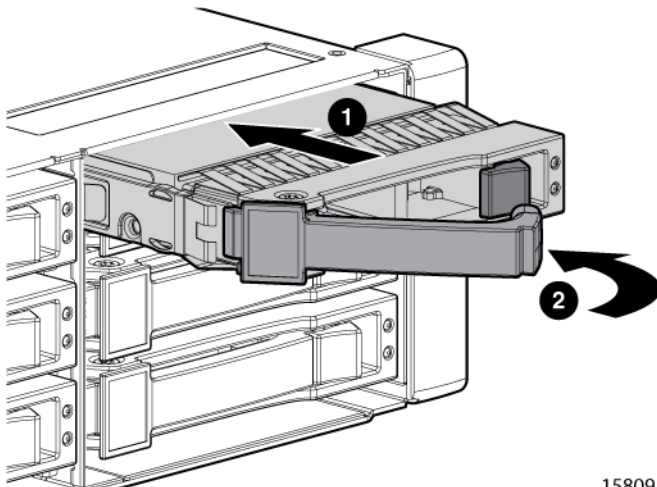
4. Reattach the front bezel covers.
5. At the rear of the cabinet, slide the shipping retaining bracket forward on both rails until the tab engages the slot in the drive enclosure. Tighten the bracket thumbscrews.
6. Populate the enclosure with available disk drives (not included with this kit), starting with the lowest number in [Figure 9 \(page 7\)](#), and continuing in order until you have inserted the desired number. If installing multiple drive enclosures, balance the quantity and sizes of disk drives between the enclosures as evenly as possible.

**Figure 9 Disk drive numbering**



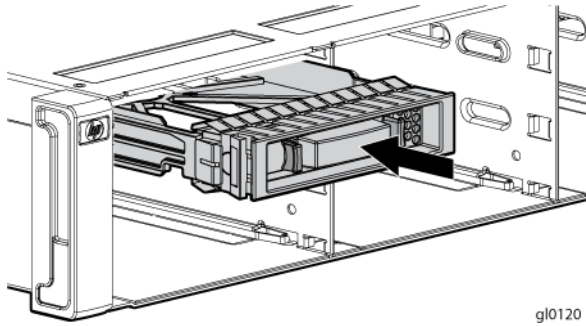
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**Figure 10 Inserting a disk drive**



7. Insert drive blank into any slots without a disk drive. Push the drive blank until you detect a click.

**Figure 11 Inserting a drive blank**



## Cabling the enclosure

Two methods are described for cabling a new drive enclosure. The online method allows a drive enclosure to be added to a powered operational array. The offline method describes cabling an array that has been powered down. The offline method is preferred if downtime is available.

**NOTE:** One controller enclosure (with two controllers) can support up to eight drive enclosures.

The power cords are supplied in two different colors should you decide to use the colors to denote sides of the cabinet. For example, you can locate all gray power cords on the left side of the cabinet, and all black power cords on the right side.

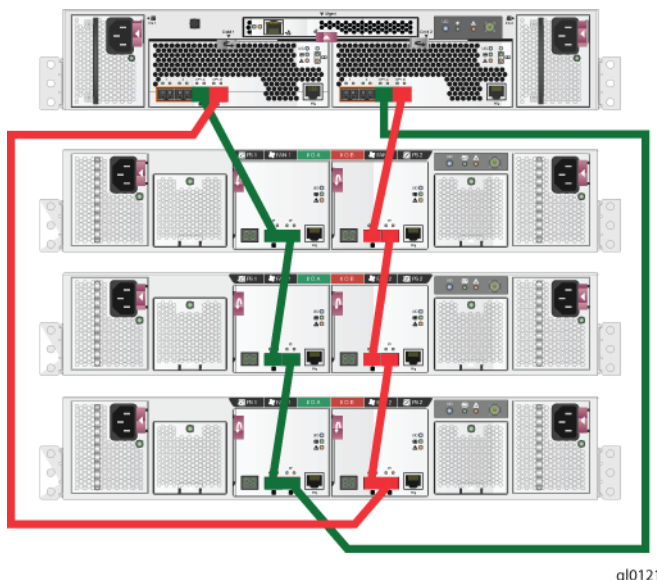
## Cabling the enclosure while offline

1. Power down the array.

Figure 12 (page 8) shows the cabling for an array with one controller enclosure and three drive enclosures. As a general cabling guideline, the P1 port on the I/O module receives input from another I/O module or a controller, and the P2 port is used for output to another I/O module or controller.

In the steps performed below, one side of the drive enclosure (I/O module A on the left side) is cabled, and then I/O module B is cabled. However, either I/O module can be cabled first when power is not applied to the array.

**Figure 12 Cabling for preexisting array**

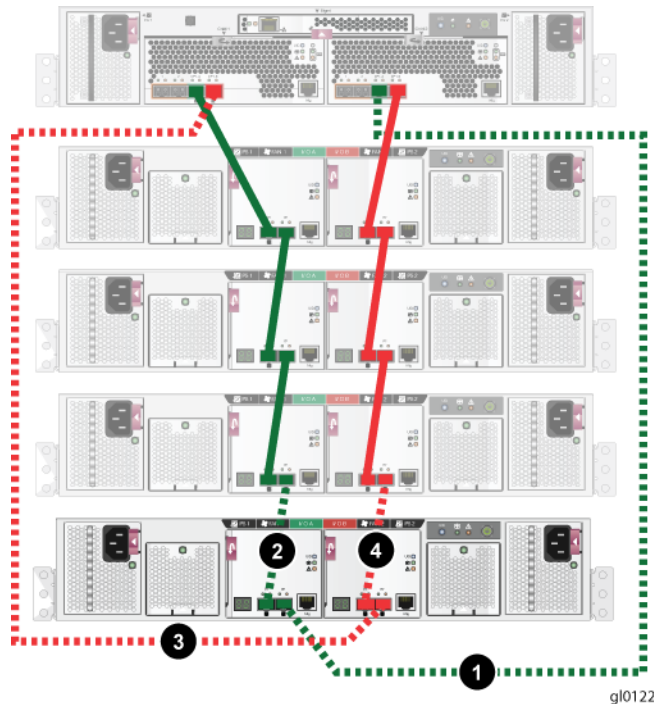




2. [Figure 13 \(page 9\)](#) shows the cabling when another drive enclosure is added to the bottom of the array. The dashed lines leading to the controller enclosure show cables that are moved, and dashed lines between the drive enclosures show cables that are added.

Unplug the Fibre Channel cable from I/O module A port P2 of the drive enclosure nearest the newly installed drive enclosure, and plug it into the P2 port of I/O module A of the newly installed drive enclosure (1, [Figure 13 \(page 9\)](#)). This should be a long cable with the far end connecting to controller 2 port DP1–A in a configuration with all the drive enclosures installed above or below the controller enclosure. If drive shelves are installed above and below the controller enclosure, see [Figure 14 \(page 11\)](#).

**Figure 13 Addition of drive enclosure to array**



1	Connects installed I/O module A, port 2 to controller 2, port DP1–A
2	Connects installed I/O module A, port 1 to existing I/O module A, port 2
3	Connects installed I/O module B, port 2 to controller 1, port DP1–B
4	Connects installed I/O module B, port 1 to existing I/O module B, port 2

3. Using a Fibre Channel copper cable provided in your kit, plug one end into the P2 port of I/O module A that was unplugged in the previous step, and plug the other end into port P1 of I/O module A in the newly installed drive enclosure (2, [Figure 13 \(page 9\)](#)).
4. Perform steps 2 and 3 on I/O module B of the newly installed drive enclosure. The results are the Fibre Channel cable on I/O Module B port 2 of the nearest drive enclosure is moved to I/O module B port 2 of the newly installed drive enclosure (3, [Figure 13 \(page 9\)](#)). In addition, a new Fibre Channel copper cable is installed between I/O Module B port P2 of the preexisting drive enclosure and I/O module B port 1 of the newly installed drive enclosure (4).
5. Using a power cord provided in your kit, plug one end into a drive enclosure power supply and the other end into a cabinet power distribution module.
6. With the remaining power cord, connect the other power supply to a cabinet power distribution module.
7. Press the Power On/Standby button on the power UID bezel (located at the rear of the drive enclosure) and hold it down long enough to power up the installed enclosure.

8. Power on any other drive enclosures attached to the array and visually check that the enclosures power on without errors. Wait at least one minute after all the enclosures are powered on for the drives to spin up and stabilize.
9. Power on the controller enclosure by pressing the power button on the power UID bezel until the enclosure responds (it may take up to 10 seconds for the controller enclosure to power on). Wait five minutes for the array to stabilize.
10. Verify that I/O modules A and B on the added enclosure have been assigned an index number of the next higher enclosure number. For example, if the previous highest index number was "3," then the installed enclosure should display "4."
11. In HP P6000 Command View, verify that the newly installed drive enclosure appears in the array hardware pane, and that the I/O modules show a good operational status.

## Cabling the enclosure while online

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**NOTE:** You can only add one disk enclosure online at a time.

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1. Using a power cord provided in your kit, plug one end into the drive enclosure power supply and the other end into a cabinet power distribution module. You will briefly hear a rush of air as power is applied, and the LEDs on the power UID flash. The power UID standby switch LED remains amber.
2. With the remaining power cord, connect the other power supply to a cabinet power distribution module. The power UID power switch LED turns green. The I/O module index number will likely display 00, but if not, ignore the index number at this time.
3. [Figure 12 \(page 8\)](#) shows the cabling for an array with one controller enclosure and three drive enclosures. As a general cabling guideline, the P1 port on the I/O module receives input from another I/O module or a controller, and the P2 port is used for output to another I/O module or controller.

In the steps performed below, one side of the drive enclosure (ports P1 and P2 of I/O module A on the left side) is cabled, and then I/O module B is cabled. Either I/O module can be cabled first as long as the other I/O module ports are not unplugged until cabling is complete on the first I/O module. This allows the controller to redundantly manage the storage while the cables are briefly pulled and reconnected on one side.

4. [Figure 13 \(page 9\)](#) shows the cabling when another drive enclosure is added to the bottom of the array. The dashed lines leading to the controller enclosure show cables that are moved, and dashed lines between the drive enclosures show cables that are added.

Unplug the Fibre Channel cable from I/O module A port P2 of the drive enclosure nearest the newly installed drive enclosure, and plug it into the P2 port of I/O module A of the newly installed drive enclosure (1, [Figure 13 \(page 9\)](#)). This should be a long cable with the far end connecting to controller 2 port DP1–A in a configuration with all the drive enclosures installed above or below the controller enclosure. If drive shelves are installed above and below the controller enclosure, see [Figure 14 \(page 11\)](#).

5. Using a Fibre Channel copper cable provided in your kit, plug one end into the P2 port of I/O module A that was unplugged in the previous step, and plug the other end into port P1 of I/O module A in the newly installed drive enclosure (2, [Figure 13 \(page 9\)](#)). Wait for the port to become visible with HP P6000 Command View.

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**NOTE:** With only one I/O module from the newly added enclosure cabled to the array, there will be HP P6000 Command View warnings that indicate disk drives in the system are only connected on one of the redundant Fibre Channel loops. This is to be expected, and the warnings should clear as soon as the other I/O module is connected.

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6. Perform steps 4 and 5 on I/O module B of the newly installed drive enclosure. The results are the Fibre Channel cable on I/O Module B port 2 of the nearest drive enclosure is moved to I/O

- module B port 2 of the newly installed drive enclosure (3, [Figure 13 \(page 9\)](#)). In addition, a new Fibre Channel copper cable is installed between I/O Module B port P2 of the preexisting drive enclosure and I/O module B port 1 of the newly installed drive enclosure (4).
7. Verify that I/O modules A and B on the added enclosure have been assigned an index number of the next higher enclosure number. For example, if the previous highest index number was "3," then the installed enclosure should display "4."
  8. In HP P6000 Command View, verify that the newly installed drive enclosure appears in the array hardware pane, and that the I/O modules show a good operational status.

## Alternate enclosure cabling

Drive enclosures may have to be installed where room is available in a cabinet. [Figure 12 \(page 8\)](#) and [Figure 13 \(page 9\)](#) show drive enclosures mounted in a cabinet on just one side of the controller enclosure. When drive enclosures are mounted on both sides of the controller enclosure, the cabling is logically the same, in that all the drive enclosures are connected serially. In this case, the long Fibre Channel cable goes from the I/O module P2 port of the last drive enclosure on one side of the controller enclosure to the farthest drive enclosure on the other side of the controller enclosure. The last drive enclosure in the series (near the controller enclosure) completes the loop back to the controller.

[Figure 14 \(page 11\)](#) shows this cabling configuration with drive enclosures above and below the controller enclosure in an array. Installing a drive enclosure above or below this configuration would keep the same pattern of cabling between the drive and controller enclosures.

**Figure 14 Array cabling for drive enclosures on both sides of the controller enclosure**

